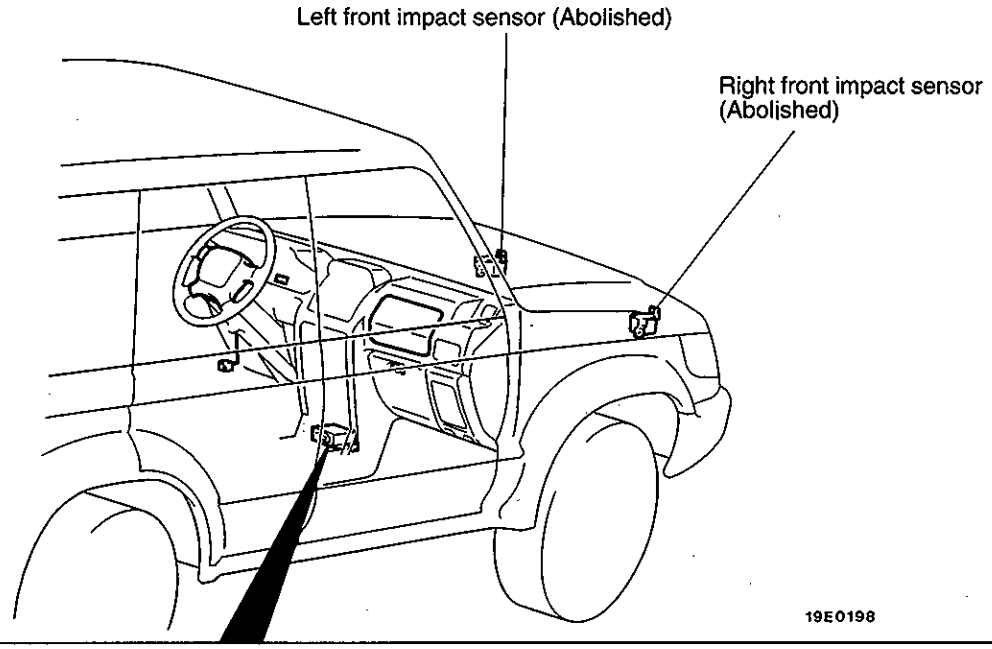
GROUP 52B
SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

GENERAL

OUTLINE OF CHANGES

The following changes have been made to the SRS. Items other than these are the same as before.

- The front impact sensors have been abolished.
- The special tool has been changed and the removal procedures for the SRS-ECU connector have become simpler as a result of the SRS diagnosis unit being changed to a SRS-ECU.



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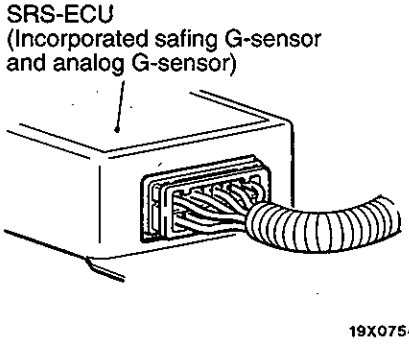

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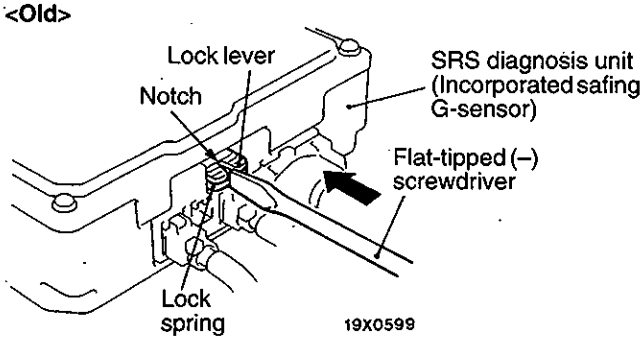
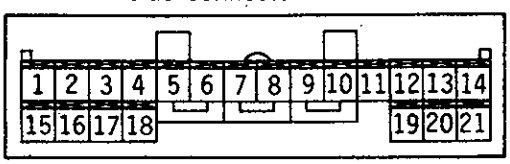


SRS-ECU side connector



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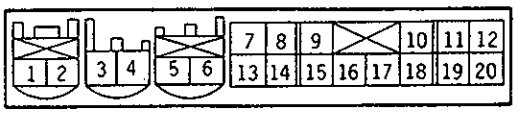
SDU side connector



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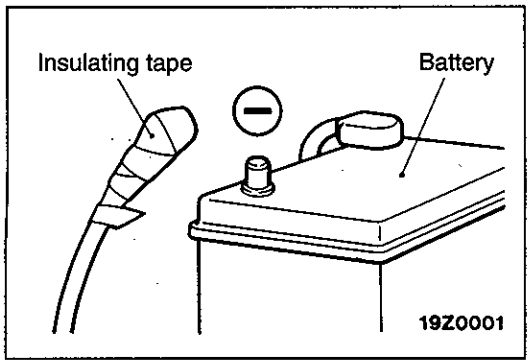
SRS SERVICE PRECAUTIONS

1. In order to avoid injury to yourself or others from accidental deployment of the air bag during servicing, read and carefully follow all the precautions and procedures described in this manual.
2. Do not use any electrical test equipment on or near SRS components, except those specified on basic manual.
   Never use an analog ohmmeter.
3. **Never attempt to repair the following components:**
   - SRS-ECU
   - Clock Spring
   - Air Bag Module
     (Driver's side or front passenger's side)

   If any of these components are diagnosed as faulty, they should only be replaced, in accordance with the INDIVIDUAL COMPONENTS SERVICE procedures in basic manual. (Refer to PAJERO Workshop Manual Pub No. PWJE9086-F)
4. Do not attempt to repair the wiring harness connectors of the SRS. If any of the connectors are diagnosed as faulty, replace the wiring harness. If the wires are diagnosed as faulty, replace or repair the wiring harness according to the following table.

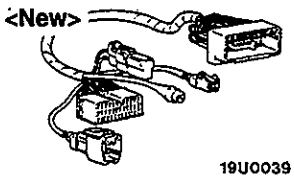
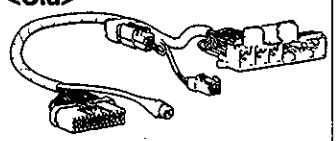
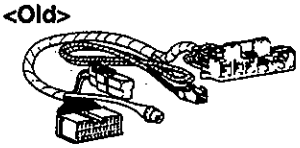
SRS-ECU Terminal No.	Harness Connector (No. of Terminals, Colour)	Destination of Harness	Corrective Action
1 to 4	21 pins, yellow	–	–
5		Dash wiring harness → Clock spring → Air bag module (Driver's side)	Correct or replace dash wiring harness Replace clock spring
6			
7		Dash wiring harness → Air bag module (Front passenger's side)	Correct or replace dash wiring harness
8			
9, 10		–	–
11		Dash wiring harness → Diagnosis connector	Correct or replace each wiring harness
12		–	–
13		Dash wiring harness → Junction block (fuse No.18)	Correct or replace each wiring harness
14		Dash wiring harness → Junction block (fuse No.12)	
15		Dash wiring harness → Instrument panel wiring harness → SRS warning lamp	
16 to 19		–	–
20		Dash wiring harness → Earth	Correct or replace dash wiring harness
21			



5. **After disconnecting the negative battery cable, wait 60 seconds or more before proceeding with the following work. The SRS system is designed to retain enough voltage to deploy the air bag for short time even after the battery has been disconnected, so serious injury may result from unintended air bag deployment if work is done on the SRS system immediately after the battery cables are disconnected.**
6. SRS components should not be subjected to heat over 93°C, so remove the SRS-ECU, air bag module and clock spring before drying or baking the vehicle after painting.
7. Whenever you finish servicing the SRS, check the SRS warning lamp operation to make sure that the system functions properly. (Refer to PAJERO Workshop Manual Pub. No. PWJE9086-F.)
8. Make certain that the ignition switch is OFF when the MUT-II is connected or disconnected.
9. If you have any questions about the SRS, please contact your local distributor.

NOTE
SERIOUS INJURY CAN RESULT FROM UNINTENDED AIR BAG DEPLOYMENT, SO USE ONLY THE PROCEDURES AND EQUIPMENT SPECIFIED IN THIS MANUAL.

SPECIAL TOOLS

Tool	Number	Name	Use
<New>  19U0039	MB991613	SRS Check Harness	• Checking the SRS electrical circuitry with a digital multi-meter (For both vehicles with driver's side air bag only and vehicles with both driver's side and front passenger's side air bags)
<Old> 	MB991349	SRS Check Harness	• Checking the SRS electrical circuitry with a digital multi-meter <Vehicles without front passenger's air bag>
<Old> 	MB991530	SRS Check Harness	• Checking the SRS electrical circuitry with a digital multi-meter <Vehicles with front passenger's air bag>

TEST EQUIPMENT

Tool	Name	Use
	Digital multi-meter	Checking the SRS electrical circuitry [Use a multi-meter for which the maximum test current is 2 mA or less at the minimum range of resistance measurement]

TROUBLESHOOTING

INSPECTION CHART FOR DIAGNOSIS CODES

Inspect according to the inspection chart that is appropriate for the malfunction code.

Code No.	Diagnosis item		Reference page
14	Analog G-sensor system in the SRS-ECU		52B-6
15, 16	Safing G-sensor system in the SRS-ECU		52B-6
21, 22, 61	Driver's side air bag module (squib) system		52B-6
24, 25, 64	Front passenger's side air bag module (squib)		52B-8
31, 32	SRS-ECU capacitor system		52B-9
34*	Connector lock system		52B-9
35	SRS-ECU (deployed air bag) system		52B-9
41*	IG_1 (A) power circuit system		52B-10
42*	IG_1 (B) power circuit system		52B-11
43	SRS warning lamp drive circuit system	Lamp does not illuminate*	52B-12
		Lamp does not switch off	52B-13
44	SRS warning lamp drive circuit system		52B-13
45	SRS-ECU non-volatile memory (EEPROM) and A/D converter system		52B-13
51, 52	Driver's side air bag module (squib ignition drive circuit) system		52B-14
54, 55	Front passenger's side air bag module (squib ignition drive circuit) system		52B-14

NOTE

(1)* If the vehicle condition returns to normal for a continuous period of 5 ± 0.2 seconds, the diagnosis code will be automatically erased, and the SRS warning lamp will return to normal.

(2) If the vehicle has a discharged battery it will store the fault codes 41 or 42. When these diagnosis codes are displayed, check the battery.

INSPECTION PROCEDURE CLASSIFIED BY DIAGNOSIS CODE

Code No. 14 Analog G-sensor system in the SRS-ECU	Probable cause
The SRS-ECU monitors the output of the analog G-sensor inside the SRS-ECU. It outputs this code when any of the following are detected. • When the analog G-sensor is not operating • When the characteristics of the analog G-sensor are abnormal • When the output from the analog G-sensor is abnormal	• Malfunction of SRS-ECU

Replace the SRS-ECU.

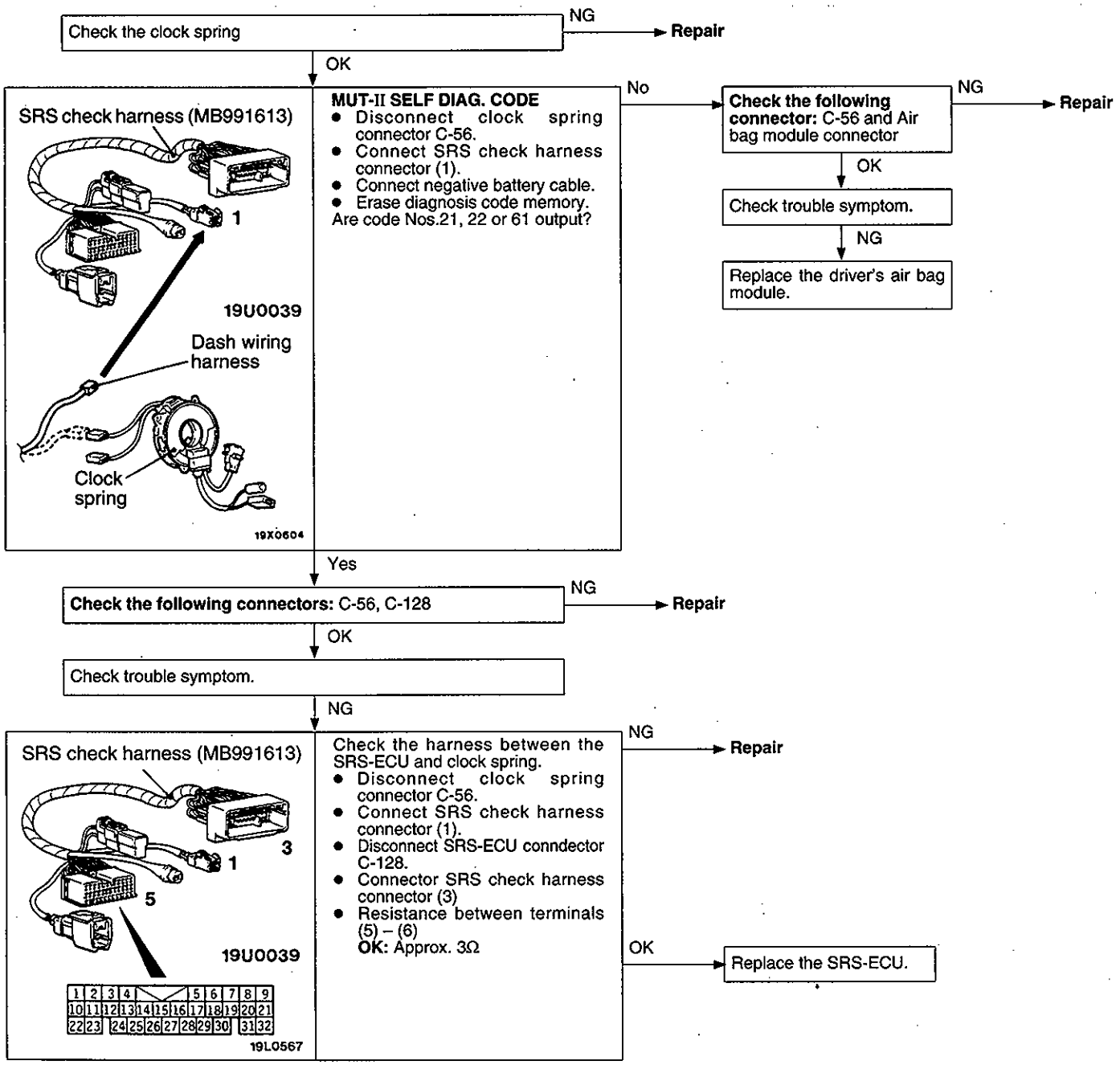
Code No.15 or 16 Safing G-sensor system in the SRS-ECU	Probable cause
This code is output if there is a short or open circuit between the terminals of the safing G-sensor inside the SRS-ECU. The trouble causes for each diagnosis code No. are as follows.	• Malfunction of SRS-ECU

Code No.	Trouble Symptom
15	Short circuit in the safing G-sensor
16	Open circuit in the safing G-sensor

Replace the SRS-ECU.

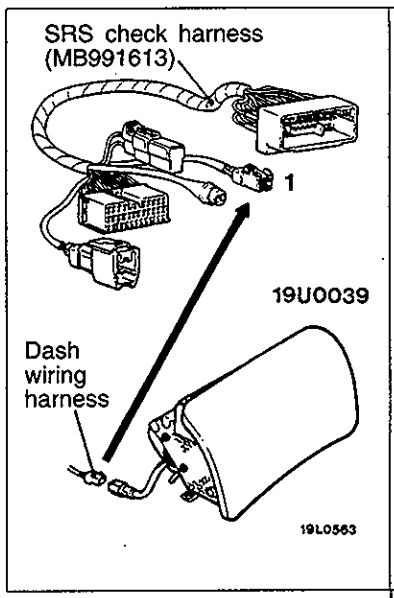
Code No. 21, 22 or 61 Air bag module (driver's side squib) system	Probable cause
These diagnosis codes are output if there is abnormal resistance between the input terminals of the air bag module (driver's side squib). The trouble causes for each code No. are as follows.	• Malfunction of clock spring • Malfunction of harnesses or connectors • Malfunction of air bag module (driver's side squib) • Malfunction of SRS-ECU

Code No.	Trouble Symptom
21	• Short in air bag module (driver's side squib) or harness short • Short in clock spring
22	• Open circuit in air bag module (driver's side squib) or open harness • Open circuit in clock spring • Malfunction of connector contact
61	• Short in air bag module (driver's side squib) harness leading to the power supply



Code No. 24, 25 or 64 Air bag module (front passenger's side squib) system <Vehicles with front passenger's air bag>	Probable cause
These diagnosis codes are output if there is abnormal resistance between the input terminals of the air bag module (front passenger's side squib). The trouble causes for each code No. are as follows.	• Malfunction of harnesses or connectors • Malfunction of air bag module (front passenger's side squib) • Malfunction of SRS-ECU

Code No.	Trouble Symptom
24	• Short in air bag module (front passenger's side squib) or harness short
25	• Open circuit in air bag module (front passenger's side squib) or open harness • Malfunction of connector contact
64	• Short in air bag module (front passenger's side squib) harness leading to the power supply



MUT-II SELF DIAG. CODE
- Disconnect front passenger's air bag module connector C-126.
- Connect SRS check harness connector (1).
- Connect negative battery cable.
- Erase diagnosis code memory.

Are code Nos. 24, 25 or 64 output?

Yes → **Check the following connectors:** C-128, C-126 — NG → **Repair**

OK ↓

Check trouble symptom.

NG ↓

Check the harness between the front passenger's air bag module (squib) and SRS-ECU. — NG → **Repair**

OK ↓

Replace the SRS-ECU.

No ↓

Replace the front passenger's air bag module.

Code. No. 31 or 32 SRS-ECU capacitor system	Probable cause
These diagnosis codes are output if the voltage at the SRS-ECU capacitor terminals is higher (No. 31) or lower (No. 32) than the specified value for 5 seconds or more. However, if diagnosis code Nos. 41 and 42 are being output due to a drop in battery voltage, code No. 32 will not be detected.	• Malfunction of SRS-ECU

Replace the SRS-ECU.

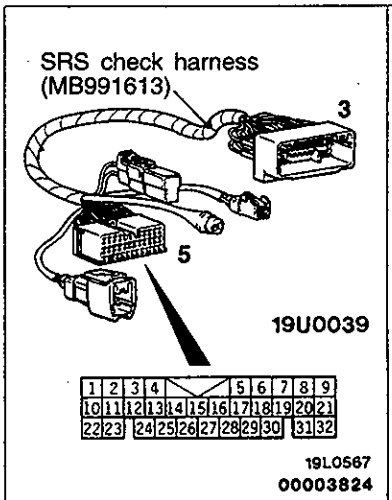
Code No. 34 Connector lock system	Probable cause
This diagnosis code is output if a poor connection of the SRS-ECU is detected. However, if the vehicle condition returns to normal, diagnosis code No. 34 will be automatically erased, and the SRS warning lamp will switch off.	• Malfunction of connectors • Malfunction of SRS-ECU

Check the following connector.
C-128
NG → **Repair**
OK ↓
Replace the SRS-ECU.

Code No. 35 SRS-ECU (deployed air bag) system	Probable cause
This code is output after the air bag deploys. If this code is output before the air bag has deployed, the cause is probably a malfunction inside the SRS-ECU.	• Malfunction of SRS-ECU

Replace the SRS-ECU

Code No. 41 IG_1 (A) power circuit system	Probable cause
This diagnosis code is output if the voltage between the IG_1 (A) terminal and the earth is lower than the specified value for a continuous period of 5 seconds or more. However, if the vehicle condition returns to normal, diagnosis code No. 41 will be automatically erased, and the SRS warning lamp will switch off.	• Malfunction of harnesses of connectors • Malfunction of SRS-ECU



Measure at SRS check harness connector (5).
- Disconnect SRS-ECU connector C-128.
- Connect SRS check harness connector (3)
- Continuity between terminals (20) – (21)

OK: Continuity

NG → **Check the following connector.** C-128 → NG → **Repair**

OK → Check trouble symptom.

NG → Check the harness between the SRS-ECU and earth, and repair if necessary.

OK → Measure at SRS check harness connector (5).
- Disconnect SRS-ECU connector C-128.
- Connect SRS check harness connector (3).
- Connect negative battery cable.
- Ignition switch: ON
- Voltage between terminal (14) and body earth.

OK: 9 V or more

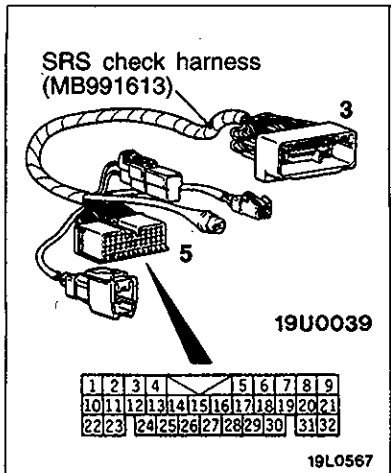
NG → **Check the following connectors.** C-116, C-107, C-77<L.H.drive vehicles>and C-78<R.H.drive vehicles> → NG → **Repair**

OK → Check trouble symptom.

NG → Check the harness between the SRS-ECU and ignition switch IG1, and repair if necessary.

OK → Replace the SRS-ECU.

Code No. 42 IG_1 (B) power circuit system	Probable cause
This diagnosis code is output if the voltage between the IG_1 (B) terminal and the earth is lower than the specified value for a continuous period of 5 seconds or more. However, if the vehicle condition returns to normal, diagnosis code No. 42 will be automatically erased, and the SRS warning lamp will switch off.	• Malfunction of harnesses or connectors



Measure at SRS check harness connector (5).
- Disconnect SRS-ECU connector C-128.
- Connect SRS check harness connector (3)
- Continuity between terminals (20) – (21)

OK: Continuity

NG → **Check the following connector.** C-128 → NG → **Repair**

OK → Check trouble symptom → NG → Check the harness between the SRS-ECU and earth, and repair if necessary.

OK → Measure at SRS check harness connector (5).
- Disconnect SRS-ECU connector C-128.
- Connect SRS-ECU check harness connector (3).
- Connect negative battery cable.
- Ignition switch: ON
- Voltage between the terminal (13) and body earth.

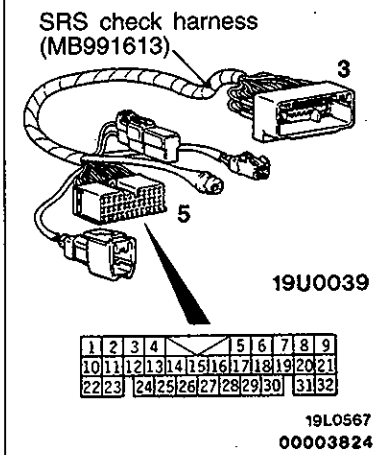
OK: 9 V or more

NG → **Check the following connectors.** C-116, C-102 and C-107 → NG → **Repair**

OK → Check trouble symptom. → NG → Check the harness between the SRS-ECU and ignition switch IG1, and repair if necessary.

OK → Replace the SRS-ECU.

Code No. 43 SRS warning lamp drive circuit system (Lamp does not illuminate.)	Probable cause
This diagnosis code is output when an open circuit occurs for a continuous period of 5 seconds while the SRS-ECU in monitoring the SRS warning lamp and the lamp is OFF (transistor OFF). However, if this code is output due to an open circuit, if the vehicle condition returns to normal, this diagnosis code No. 43 will be automatically erased, and the SRS warning lamp will return to normal.	• Malfunction of harnesses or connectors • Blown bulb • Malfunction of SRS-ECU • Malfunction of combination meter



Measure at SRS check harness connector (5).
- Disconnect SRS-ECU connector C-128.
- Connect SRS check harness connector (3)
- Continuity between terminals (20) – (21)

OK: Continuity

NG → **Check the following connector.** C-128 → NG → **Repair**

OK → Check trouble symptom → NG → Check the harness between the SRS-ECU and earth, and repair if necessary.

OK →

Measure at SRS check harness connector (5).
- Disconnect SRS-ECU connect C-128.
- Connect SRS check harness connector (3).
- Connect negative battery cable.
- Ignition switch: ON
- Connect terminal (15) to the body earth.

OK: Lamp illuminates

NG → Blown bulb inspection → NG → **Repair**

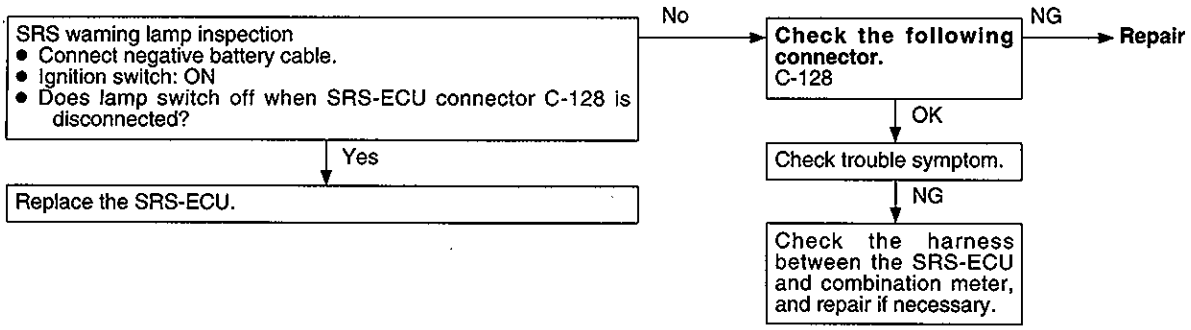
OK → **Check the following connectors.** C-116, C-110, C-05 and C-11 → NG → **Repair**

OK → Check trouble symptom. → NG → Check the harness between the SRS-ECU and ignition switch (IG1). → NG → **Repair**

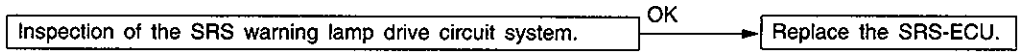
OK → Replace the combination meter.

OK → Replace the SRS-ECU.

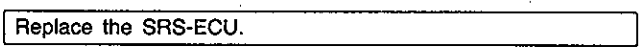
Code No. 43 SRS warning lamp drive circuit system (Lamp does not switch off.)	Probable cause
This diagnosis code is output when a short to earth occurs in the harness between the lamp and the SRS-ECU while the SRS-ECU is monitoring the SRS warning lamp and the lamp is ON.	• Malfunction of harnesses or connectors • Malfunction of SRS-ECU • Malfunction of combination meter



Code No. 44 SRS warning lamp drive circuit system	Probable cause
This diagnosis code is output when a short occurs in the lamp drive circuit or a malfunction of the output transistor inside the SRS-ECU is detected while the SRS-ECU is monitoring the SRS warning lamp drive circuit.	• Malfunction of harnesses or connectors • Malfunction of SRS-ECU



Code No. 45 SRS-ECU non-volatile memory (EEPROM) and A/D converter system	Probable cause
This diagnosis code is output if there is a malfunction in the SRS-ECU non-volatile memory (EEPROM) or A/D converter.	• Malfunction of SRS-ECU

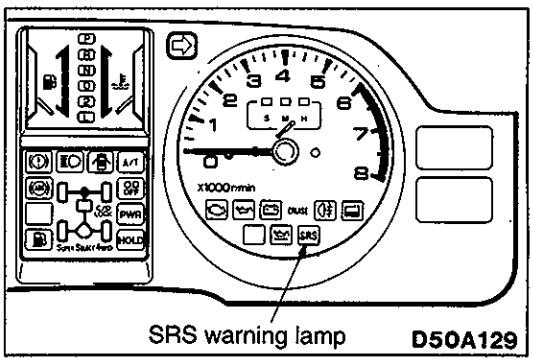


Code No. 51 or 52 Driver's side air bag module (squib ignition drive circuit) system	Probable cause
This code output if a short (No. 51) or an open circuit (No. 52) is detected in the circuit for the driver's seat.	• Malfunction of SRS-ECU

Replace the SRS-ECU.

Code No. 54 or 55 Front passenger's side air bag module (squib ignition drive circuit) system	Probable cause
This code is output if a short (No. 54) or open circuit (No. 55) is detected in the circuit for the passenger's seat.	• Malfunction of SRS-ECU

Replace the SRS-ECU.



SRS WARNING LAMP INSPECTION

1. Check to be sure that the SRS warning lamp illuminates when the ignition switch is in the ON position.
2. Check to be sure that it illuminates for approximately 7 seconds and then switches off.
3. If the above is not the case, inspect the diagnosis codes.

INSPECTION CHART FOR TROUBLE SYMPTOMS

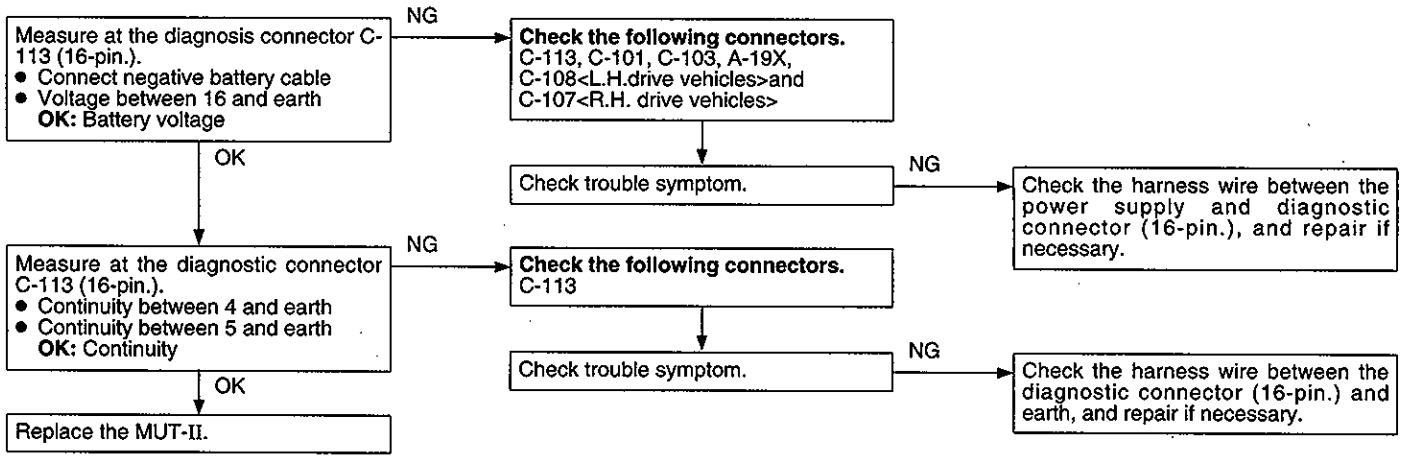
Get an understanding of the trouble symptoms and check according to the inspection procedure chart.

Trouble symptom		Inspection Procedure No.	Reference page
Communication with MUT-II is not possible.	Communication with all systems is not possible.	1	52B-15
	Communication is not possible with SRS only	2	52B-16
When the ignition key is turned to "ON" (engine stopped), the SRS warning lamp does not illuminate.		Refer to diagnosis code No. 43.	52B-13
After the ignition switch is turned to ON, the SRS warning lamp is still on after approximately 7 seconds have passed.		Refer to diagnosis code No. 43.	52B-13

INSPECTION PROCEDURE FOR TROUBLE SYMPTOMS

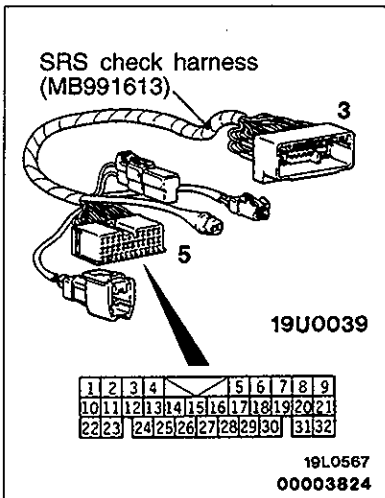
Inspection Procedure 1

Communication with MUT-II is not possible. (Communication with all system is not possible)	**Probable cause**
The cause is probably a power supply system (including earth circuit) of the diagnosis line.	• Malfunction of connectors • Malfunction of harness



Inspection Procedure 2

Communication with MUT-II is not possible. (Communication is not possible with SRS only)	Probable cause
If communication is not possible with the SRS only, the cause is probably an open circuit in the diagnosis output circuit of the SRS or in the power circuit (including earth circuit).	• Malfunction of harnesses or connectors • Malfunction of SRS-ECU



Measure at SRS check harness connector (5).
- Disconnect SRS-ECU connector C-128.
- Connect SRS check harness connector (3)
- Continuity between terminals (20) – (21)
  OK: Continuity

NG → **Check the following connector.** C-128 → NG → **Repair**

OK → Check trouble symptom.

NG → Check the harness between the SRS-ECU and earth, and repair if necessary.

OK → Measure at SRS check harness connector (5).
- Disconnect SRS-ECU connector C-128.
- Connect SRS check harness connector (3).
- Connect negative battery cable.
- Ignition switch: ON
- Voltage between the terminal (13) and body earth.
  OK: 9 V or more
- Voltage between the terminal (14) and body earth
  OK: 9 V or more

NG → **Check the following connectors.** C-116, C-102, C-107, C-77<L.H.drive vehicles> and C-78<R.H.drive vehicles> → NG → **Repair**

OK → Check trouble symptom.

NG → Check the harness between the SRS-ECU and ignition switch IG1 or ignition switch IG1 (B), and repair if necessary.

OK → Check the harness between the SRS-ECU and diagnosis connector. → NG → **Repair**

OK → Replace the SRS-ECU.